



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,363	11/08/2001	Neil Broderick	05788.0188	5231

7590 11/03/2003

Finnegan, Henderson, Farabow,
Garrett & Dunner, L.L.P.
1300 I Street, N.W.
Washington, DC 20005-3315

EXAMINER

LEE, JOHN D

ART UNIT	PAPER NUMBER
----------	--------------

2874

DATE MAILED: 11/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,363

Applicant(s)

BRODERICK ET AL.

Examiner

John D. Lee

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 2874

Receipt is acknowledged of papers submitted under 35 U.S.C. §§ 119(a)-(d), which papers have been placed of record in the file.

Acknowledgement is also made of a claim for domestic priority under 35 U.S.C. § 119(e) based on provisional U.S. Application Serial Number 60/248,093, filed on November 14, 2000.

The six (6) sheets of formal drawing filed with this application on November 8, 2001, are acceptable.

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(f) he did not himself invent the subject matter sought to be patented.

Claims 1-19 are rejected under 35 U.S.C. § 102(f) because the applicant did not invent the claimed subject matter. The cited publications to Faccio et al and Monro et al (documents "U", "V", "W", and "X" on the attached form PTO-892) describe the invention which is being claimed in the present application. In each of these publications, however, inventorship is indicated to reside in more than just the four individuals listed as inventors in the patent application. Moreover, Neil Broderick is not mentioned in the Faccio et al publications. It therefore appears clear that the inventors named in the present application are not (in totality) the inventors of the subject matter sought to be patented.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 and 15 are further rejected under 35 U.S.C. § 103(a) as being unpatentable over the CLEO '99 article by Richardson (submitted by applicant). This reference was published (May 1999) more than a year prior to applicant's earliest priority date and thus qualifies as a reference against the claims. Richardson discloses the fabrication of quasi phase matched poled nonlinear structures in holey optical fibers, essentially the same device and method set forth in these claims. The difference between the claims and Richardson is that Richardson does not specify that the parametric nonlinear processes for which the poled holey fibers are intended involve first and second optical frequencies ω_1 and ω_2 that differ. Because the reference indicates, however, that permanent and large second order nonlinearities are formed in the holey fibers, a person of ordinary skill in the art would have understood that this certainly includes the parametric interactions involving first and second optical frequencies ω_1 and ω_2 that differ (such as those interactions listed in claims 7-10 herein). The person of ordinary skill would also have understood that such nonlinear interactions would include combinations of ω_1 and ω_2 that meet many of the limitations set forth in claims 5 and 6 herein. The claimed invention would thus have been obvious in view of Richardson. With regard to claim 2, although not stated in Richardson, the

holey fiber structure therein would obviously provide a bandwidth of *at least* one of the amounts set forth in the claim. Regarding claim 3, note that Richardson states that the holey fibers therein provide single mode guidance. Regarding claim 4, Richardson states that the holey fibers therein have "large" mode areas. The specific numeric mode effective areas of this claim would thus have been obvious for the Richardson fibers.

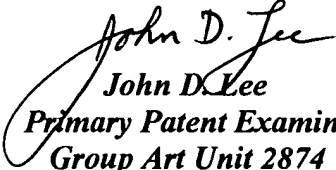
Claims 16-19 are further rejected under 35 U.S.C. § 103(a) as being unpatentable over the CLEO '99 article by Richardson (submitted by applicant) in view of the CLEO 2000 article by Bonfrate et al (submitted by applicant). Bonfrate et al was published (May 2000) before applicant's earliest priority date and thus qualifies as a reference against the claims. Richardson does not give any details as to how the quasi phase matched poled nonlinear structures in holey optical fibers are formed, except to state that they are "achieved using thermal poling with periodic electrode structures". Standard techniques of "using thermal poling with periodic electrode structures" for non-hole fibers are set forth in the Bonfrate et al reference, and these are the same techniques claimed by applicant. Use of the Bonfrate et al techniques in forming the Richardson quasi phase matched holey fiber structures would thus have been obvious to a person of ordinary skill in the art.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Application Publication 2002/0076155 A1 to Choi et al describes a method of fabricating quasi phase matched poled nonlinear structures in optical fibers having holes, though these are not the "holey optical fibers" of applicant's claims.

All of the prior art documents submitted by applicant in the Information Disclosure Statement filed on April 9, 2002, have been considered and made of record. Note the attached initialed copy of form PTO-1449.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. §§ 102(e), (f) or (g) prior art under 35 U.S.C. § 103(a).

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (703) 308-4886. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956, to the technical support staff supervisor (Team 2) at telephone number (703) 308-3072, or to the Technology Center 2800 Customer Service Office at telephone number (703) 306-3329.


John D. Lee
Primary Patent Examiner
Group Art Unit 2874